FIG. 1

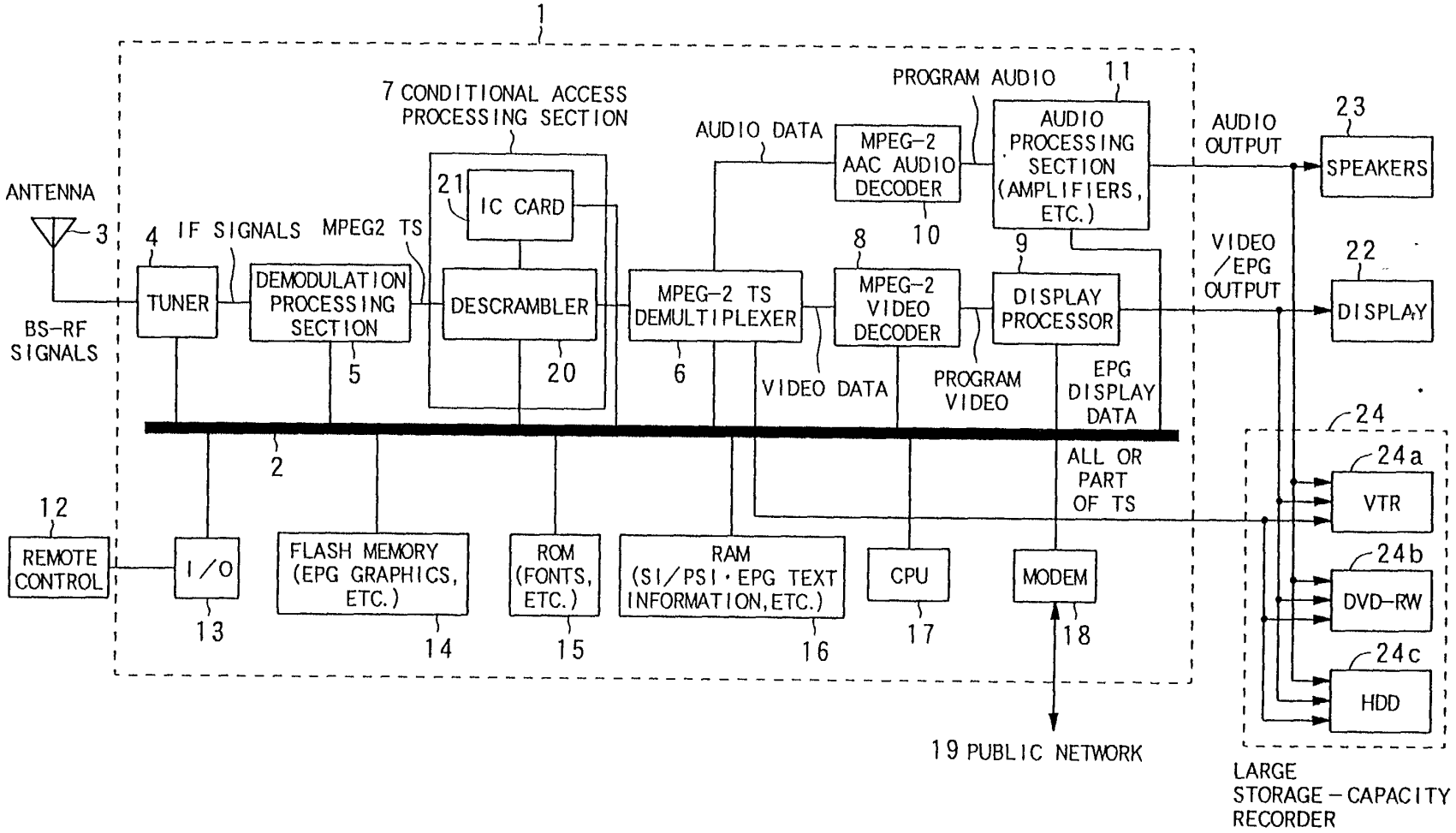
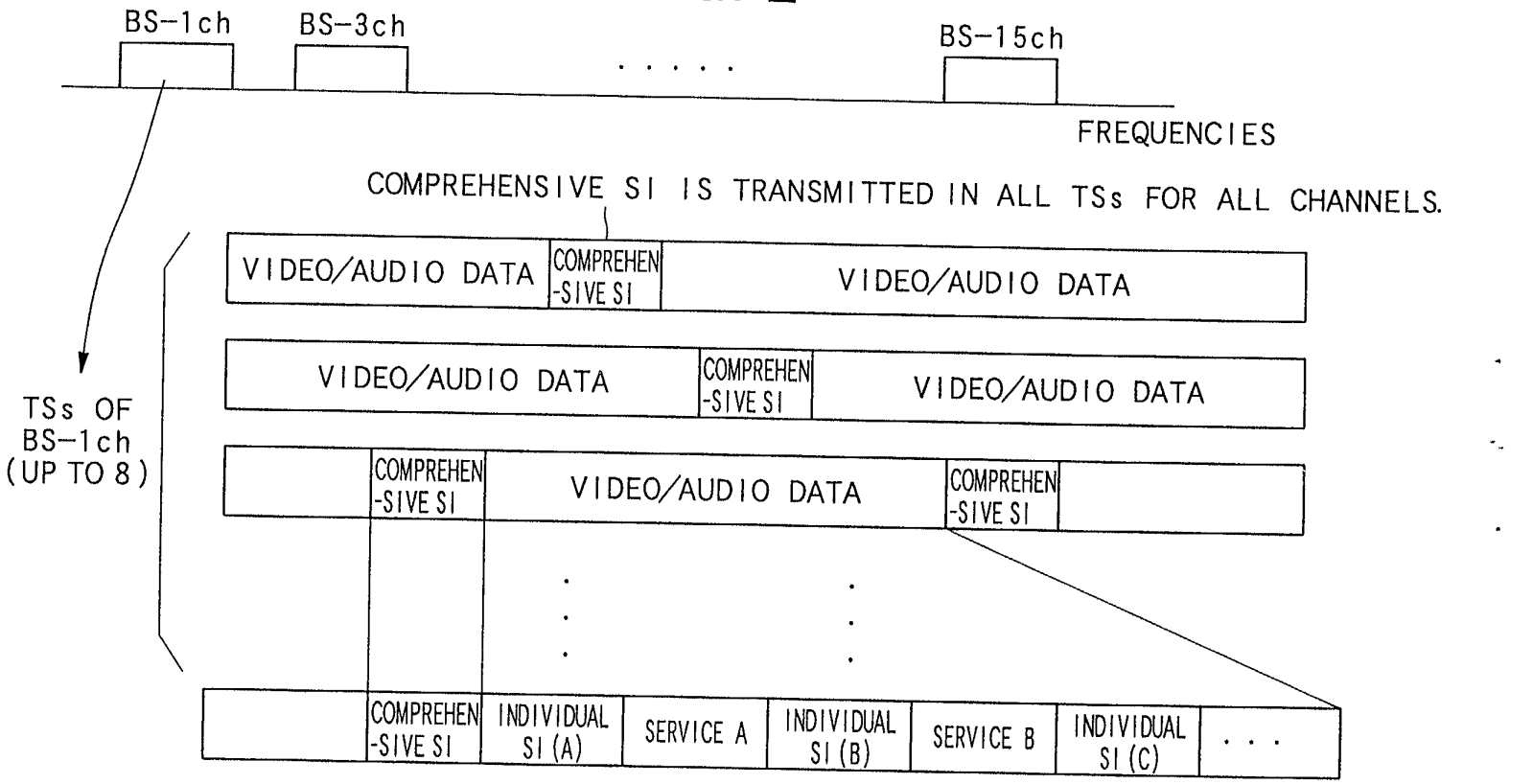

1
7 CONDITIONAL ACCESS PROCESSING SECTION
PROGRAM AUDIO
11
AUDIO DATA
MPEG-2 AAC AUDIO DECODER
AUDIO PROCESSING SECTION (AMPLIFIERS, ETC.)
AUDIO OUTPUT
23
SPEAKERS
ANTENNA
3
4
IF SIGNALS
MPEG2 TS
21
IC CARD
8
10
9
VIDEO /EPG OUTPUT
22
DISPLAY
TUNER
DEMODULATION PROCESSING SECTION
DESCRAMBLER
MPEG-2 TS DEMULTIPLEXER
MPEG-2 VIDEO DECODER
DISPLAY PROCESSOR
BS-RF SIGNALS
5
20
6
VIDEO DATA
PROGRAM VIDEO
EPG DISPLAY DATA
24
2
ALL OR PART OF TS
24a
VTR
12
REMOTE CONTROL
I/O
FLASH MEMORY (EPG GRAPHICS, ETC.)
ROM (FONTS, ETC.)
RAM (SI/PSI・EPG TEXT INFORMATION, ETC.)
CPU
MODEM
24b
DVD-RW
13
14
15
16
17
18
24c
HDD
19 PUBLIC NETWORK
LARGE STORAGE-CAPACITY RECORDER

FIG. 2



INDIVIDUAL SI IS TRANSMITTED ONLY IN TS CONTAINING THE SERVICES.

FOR EACH CHANNEL,
MAXIMUM OF 8 MPEG-2 TSs ARE TRANSMITTABLE
MAXIMUM OF 32 SERVICES ARE TRANSMITTABLE PER TS
(UP TO 8 FOR TV, UP TO 16 FOR RADIO, UP TO 24 ITEMS OF DATA)

FIG.3

PROGRAM CODE	PROGRAM TITLE	CHANNEL NUMBER	DATE	START TIME	END TIME	CATEGORY												...
						MAIN1				MAIN2				MAIN3				
							SUB1	SUB2	SUB3		SUB1	SUB2	SUB3		SUB1	SUB2	SUB3	...
10000	PROGRAM 1	130ch	MAY 13	13:00	13:45	EDUCATION	ENGLISH	—	—	—	—	—	—	—	—	—	—	...
10001	PROGRAM 2	24ch	EVERY SATURDAY	17:00	17:05	SPORTS	BASEBALL	—	—	—	—	—	—	—	—	—	—	...
10002	PROGRAM 3	40ch	MAY 13	14:00	15:00	SPORTS	BASEBALL	SOCCER	TENNIS	NEWS	—	—	—	—	—	—	—	...
10003	PROGRAM 4	145ch	EVERYDAY	15:15	15:45	MOVIE	ACTION	—	—	—	—	—	—	—	—	—	—	...
10004	PROGRAM 5	130ch	MAY 13	17:00	19:00	MOVIE	CARTOON	—	—	—	—	—	—	—	—	—	—	...
10005	PROGRAM 6	56ch	MAY 13	19:30	20:00	MUSIC	POP MUSIC	JAZZ	—	—	—	—	—	—	—	—	—	...
10006	PROGRAM 7	56ch	MAY 13	20:00	21:00	COOKING	—	—	—	—	—	—	—	—	—	—	—	...
10007	PROGRAM 8	56ch	MAY 13	20:30	21:00	DOCU-MENTARY	—	—	—	TRAVEL	AFRICA	—	—	—	—	—	—	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

FIG.4

CATEGORY	DISPLAY PRIORITY LEVEL	DISPLAY FLAG	DISPLAY MODE
VARIETY	A	1	RED
SPORTS	B	1	YELLOW
MOVIE	C	1	BLUE
MUSIC	D		GREEN
DRAMA	E		ORANGE
NEWS	D		REDDISH PURPLE
CARTOON	F		RED
DOCUMENTARY	G		BLUISH GREEN
...	...		...

25

FIG. 5

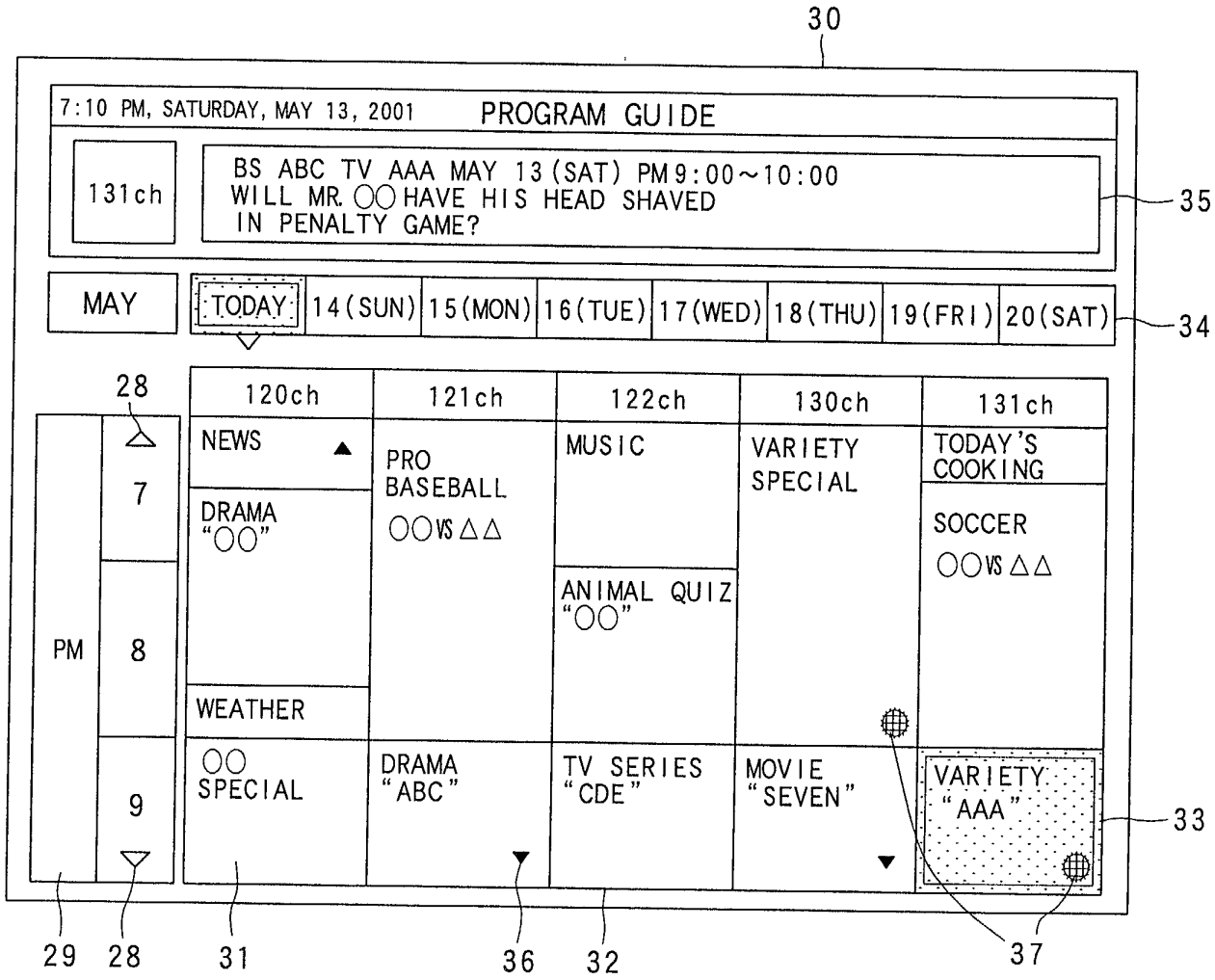

30
7:10 PM, SATURDAY, MAY 13, 2001
PROGRAM GUIDE
131ch
BS ABC TV AAA MAY 13 (SAT) PM 9:00~10:00
WILL MR. ○○ HAVE HIS HEAD SHAVED
IN PENALTY GAME?
35
MAY
TODAY
14 (SUN)
15 (MON)
16 (TUE)
17 (WED)
18 (THU)
19 (FRI)
20 (SAT)
34
28
PM
7
8
9
120ch
121ch
122ch
130ch
131ch
NEWS
DRAMA "○○"
WEATHER
PRO BASEBALL ○○ VS △△
MUSIC
ANIMAL QUIZ "○○"
VARIETY SPECIAL
TODAY'S COOKING
SOCCER ○○ VS △△
○○ SPECIAL
DRAMA "ABC"
TV SERIES "CDE"
MOVIE "SEVEN"
VARIETY "AAA"
33
29
28
31
36
32
37

FIG.6

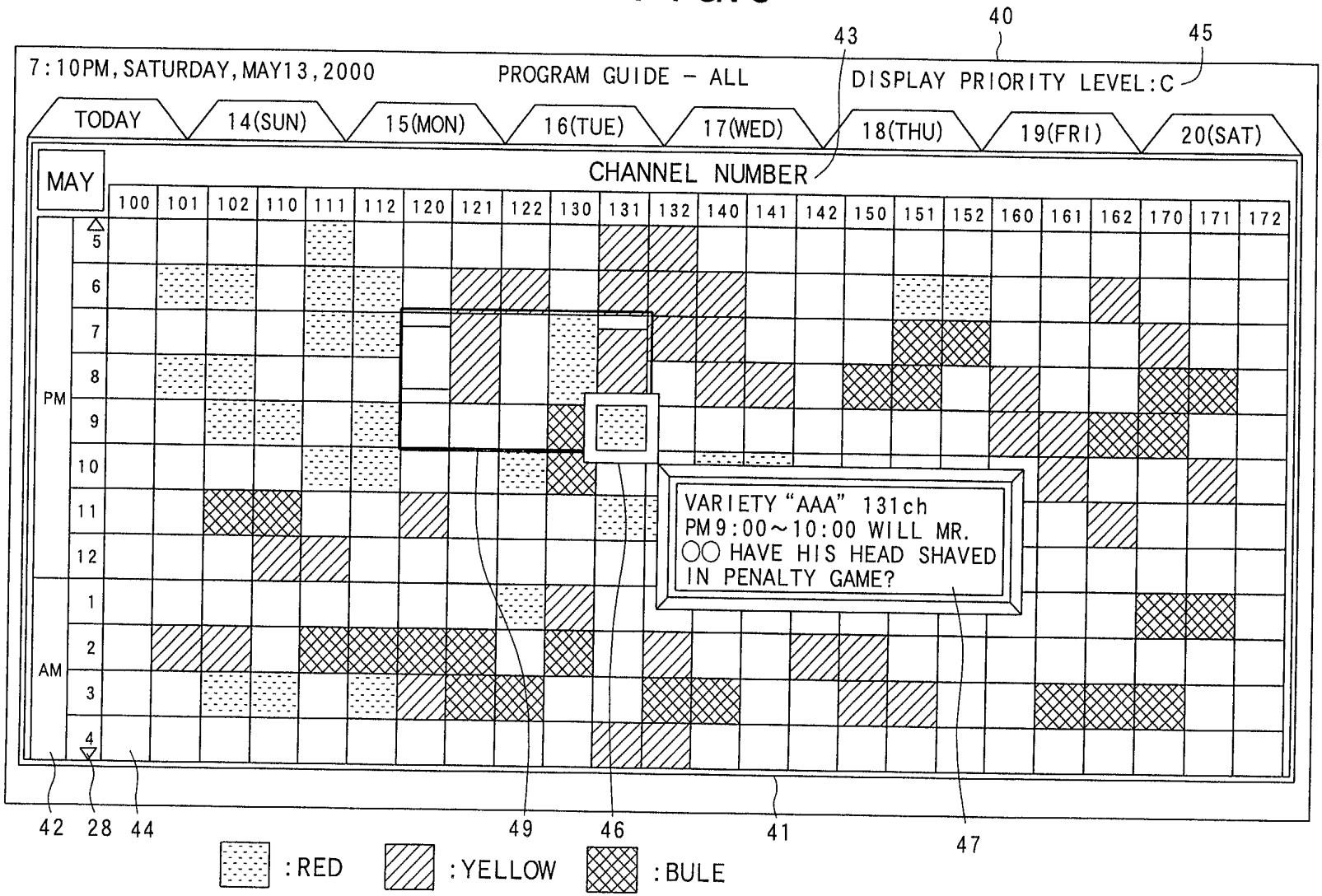

7:10PM, SATURDAY, MAY13, 2000
PROGRAM GUIDE - ALL
DISPLAY PRIORITY LEVEL:C
40
43
45
TODAY
14(SUN)
15(MON)
16(TUE)
17(WED)
18(THU)
19(FRI)
20(SAT)
MAY
CHANNEL NUMBER
100 101 102 110 111 112 120 121 122 130 131 132 140 141 142 150 151 152 160 161 162 170 171 172
PM
AM
5 6 7 8 9 10 11 12 1 2 3 4
VARIETY "AAA" 131ch
PM9:00~10:00 WILL MR. ○○ HAVE HIS HEAD SHAVED IN PENALTY GAME?
42
28
44
49
46
41
47
:RED
:YELLOW
:BULE

FIG.7

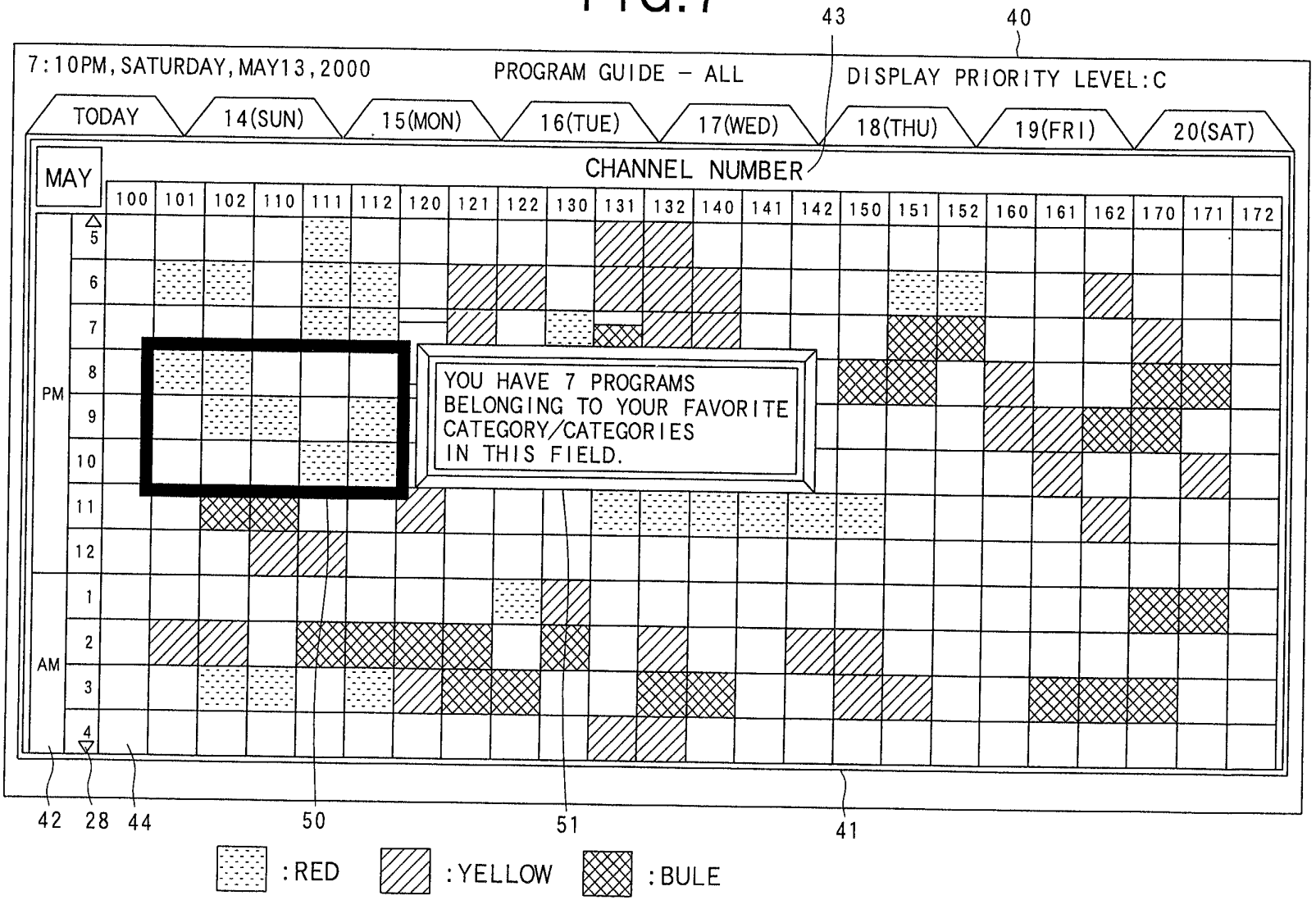

43
40
7:10PM, SATURDAY, MAY13, 2000
PROGRAM GUIDE – ALL
DISPLAY PRIORITY LEVEL:C
TODAY
14(SUN)
15(MON)
16(TUE)
17(WED)
18(THU)
19(FRI)
20(SAT)
MAY
CHANNEL NUMBER
100 101 102 110 111 112 120 121 122 130 131 132 140 141 142 150 151 152 160 161 162 170 171 172
PM
AM
5 6 7 8 9 10 11 12 1 2 3 4
YOU HAVE 7 PROGRAMS BELONGING TO YOUR FAVORITE CATEGORY/CATEGORIES IN THIS FIELD.
42
28
44
50
51
41
:RED
:YELLOW
:BULE

FIG.8

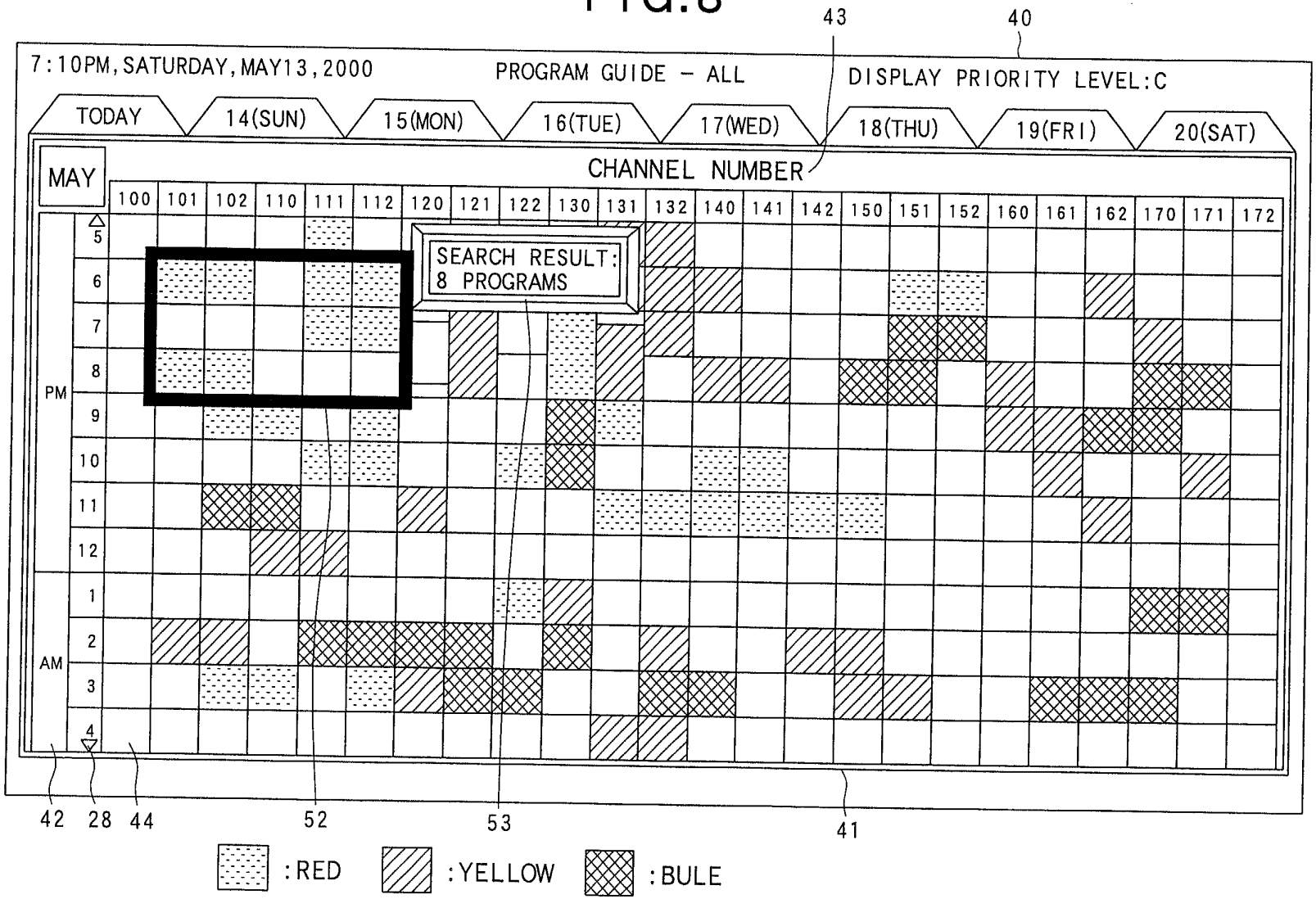

43
40
7:10PM, SATURDAY, MAY13, 2000
PROGRAM GUIDE - ALL
DISPLAY PRIORITY LEVEL:C
TODAY
14(SUN)
15(MON)
16(TUE)
17(WED)
18(THU)
19(FRI)
20(SAT)
MAY
CHANNEL NUMBER
100 101 102 110 111 112 120 121 122 130 131 132 140 141 142 150 151 152 160 161 162 170 171 172
SEARCH RESULT:
8 PROGRAMS
PM
AM
5 6 7 8 9 10 11 12 1 2 3 4
42 28 44 52 53 41
:RED
:YELLOW
:BULE

FIG. 9

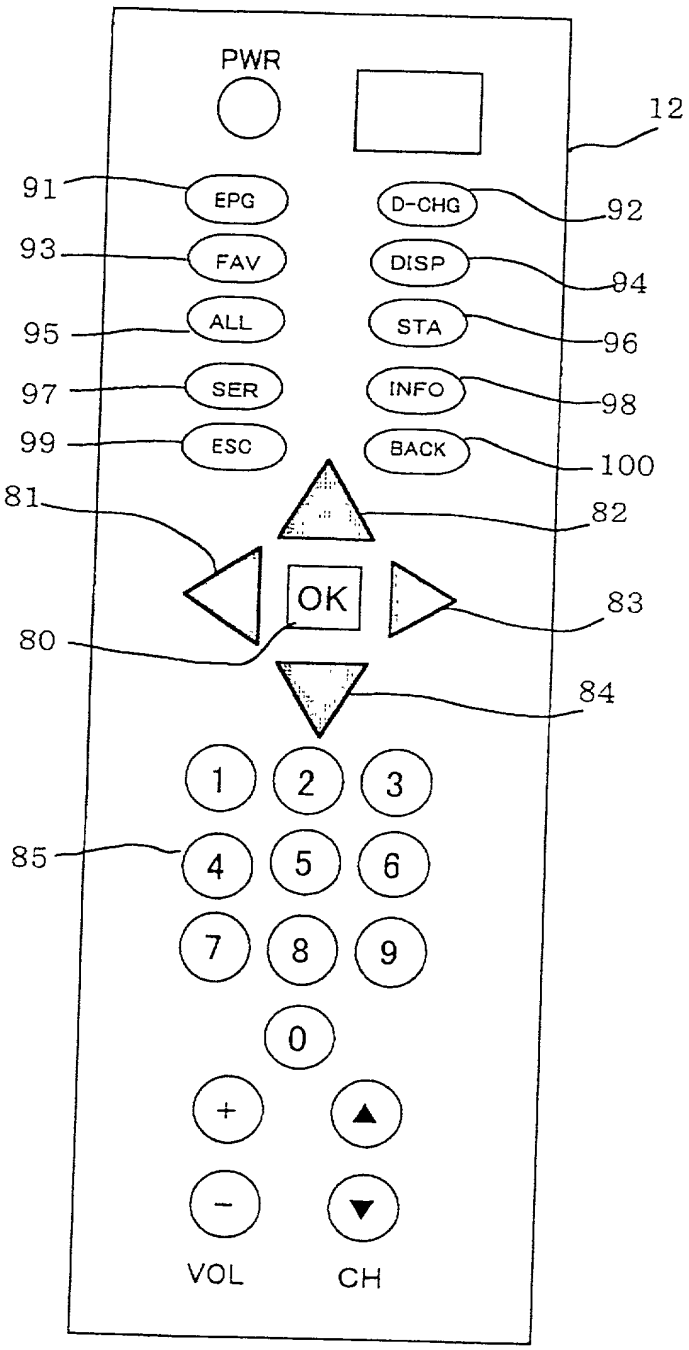

PWR
12
91
EPG
D-CHG
92
93
FAV
DISP
94
ALL
STA
95
96
97
SER
INFO
98
99
ESC
BACK
100
81
82
OK
83
80
84
1
2
3
85
4
5
6
7
8
9
0
+
▲
−
▼
VOL
CH

FIG.10

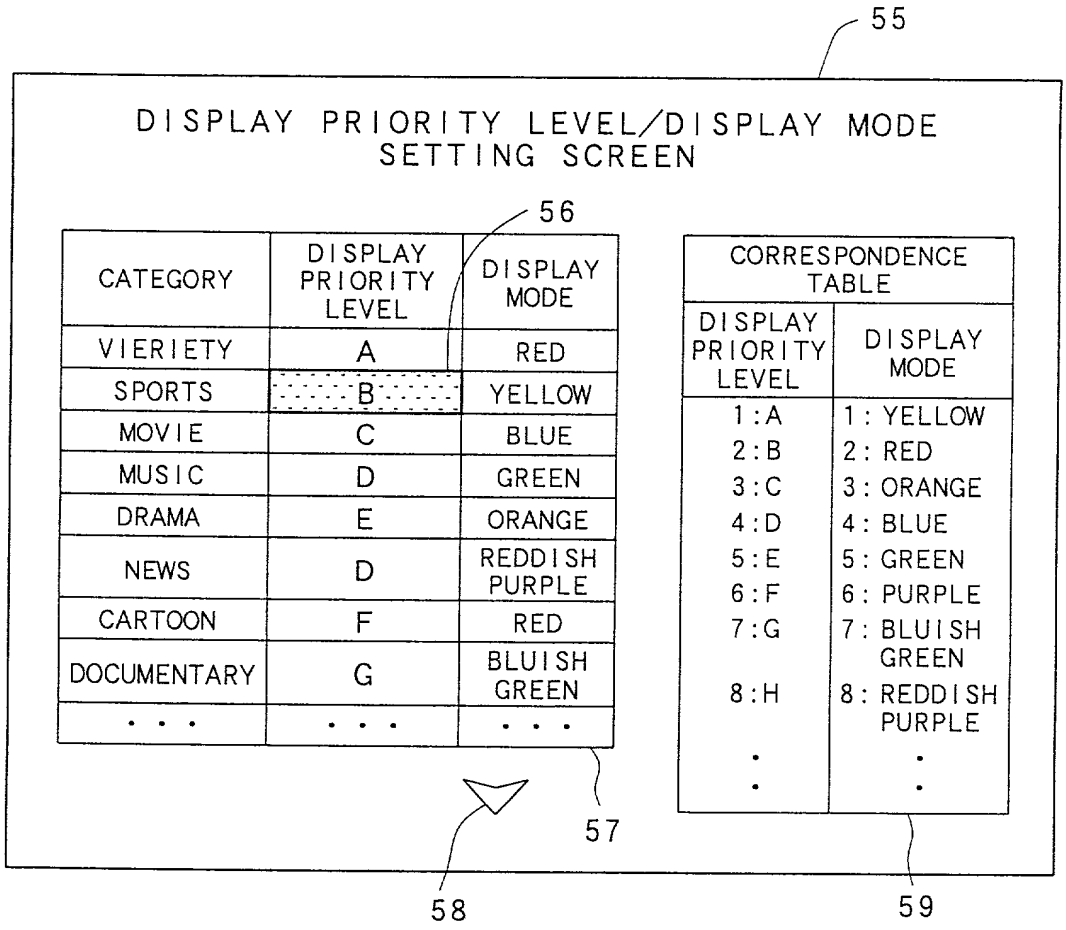

55
DISPLAY PRIORITY LEVEL/DISPLAY MODE SETTING SCREEN
56
CATEGORY
DISPLAY PRIORITY LEVEL
DISPLAY MODE
VIERIETY
A
RED
SPORTS
B
YELLOW
MOVIE
C
BLUE
MUSIC
D
GREEN
DRAMA
E
ORANGE
NEWS
D
REDDISH PURPLE
CARTOON
F
RED
DOCUMENTARY
G
BLUISH GREEN
CORRESPONDENCE TABLE
DISPLAY PRIORITY LEVEL
DISPLAY MODE
1:A
1: YELLOW
2:B
2: RED
3:C
3: ORANGE
4:D
4: BLUE
5:E
5: GREEN
6:F
6: PURPLE
7:G
7: BLUISH GREEN
8:H
8: REDDISH PURPLE
57
58
59

FIG.11

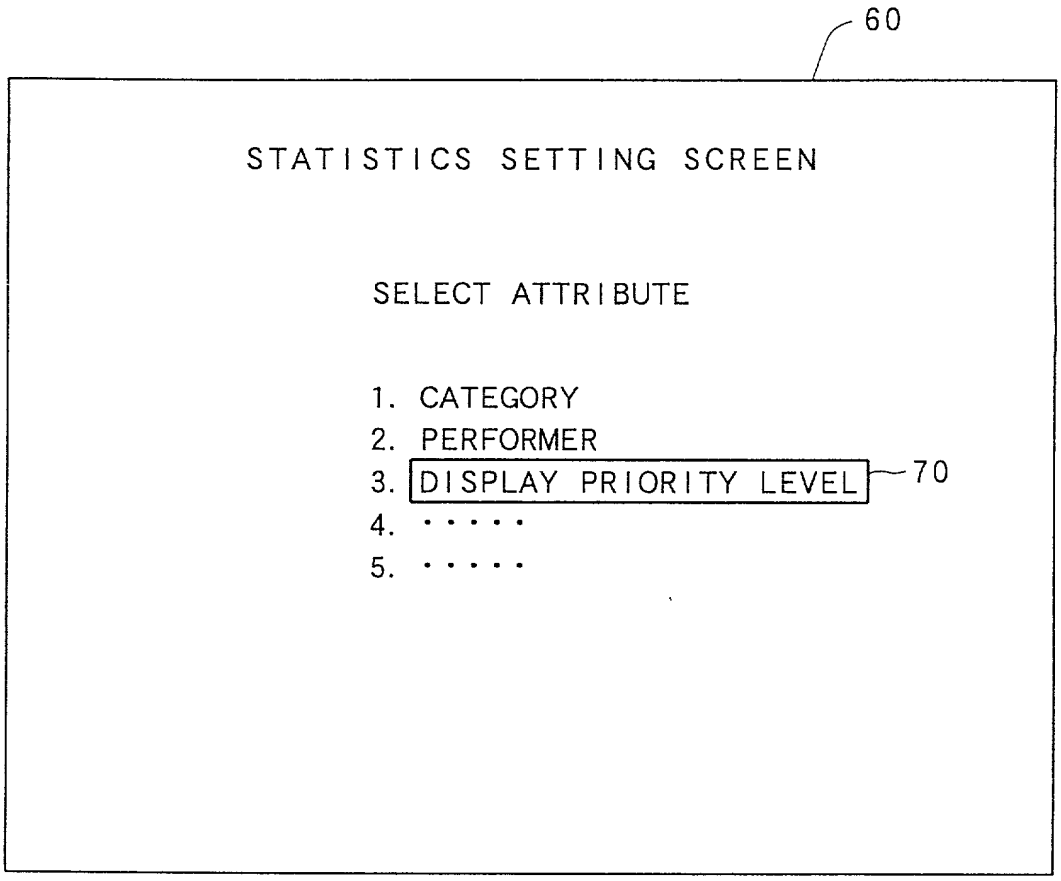

60
STATISTICS SETTING SCREEN
SELECT ATTRIBUTE
1. CATEGORY
2. PERFORMER
3. DISPLAY PRIORITY LEVEL
70
4. • • • • •
5. • • • • •

FIG.12

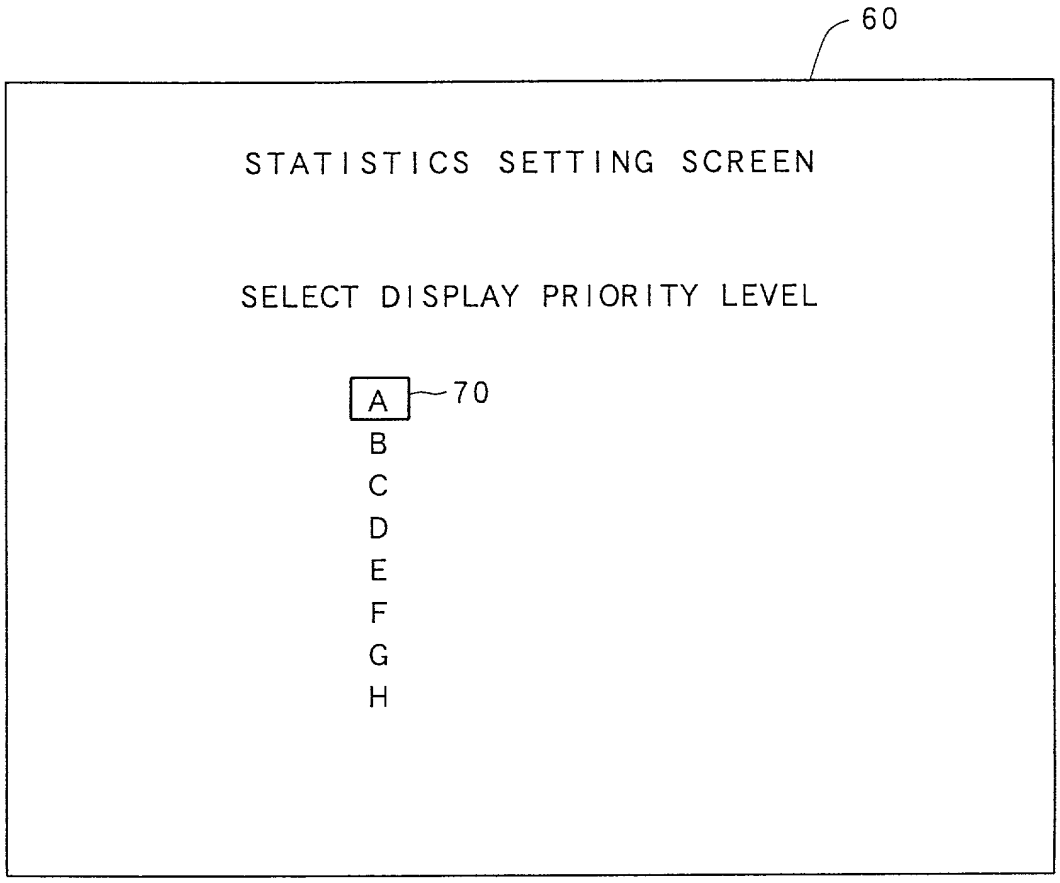

60
STATISTICS SETTING SCREEN
SELECT DISPLAY PRIORITY LEVEL
A
70
B
C
D
E
F
G
H

FIG.13

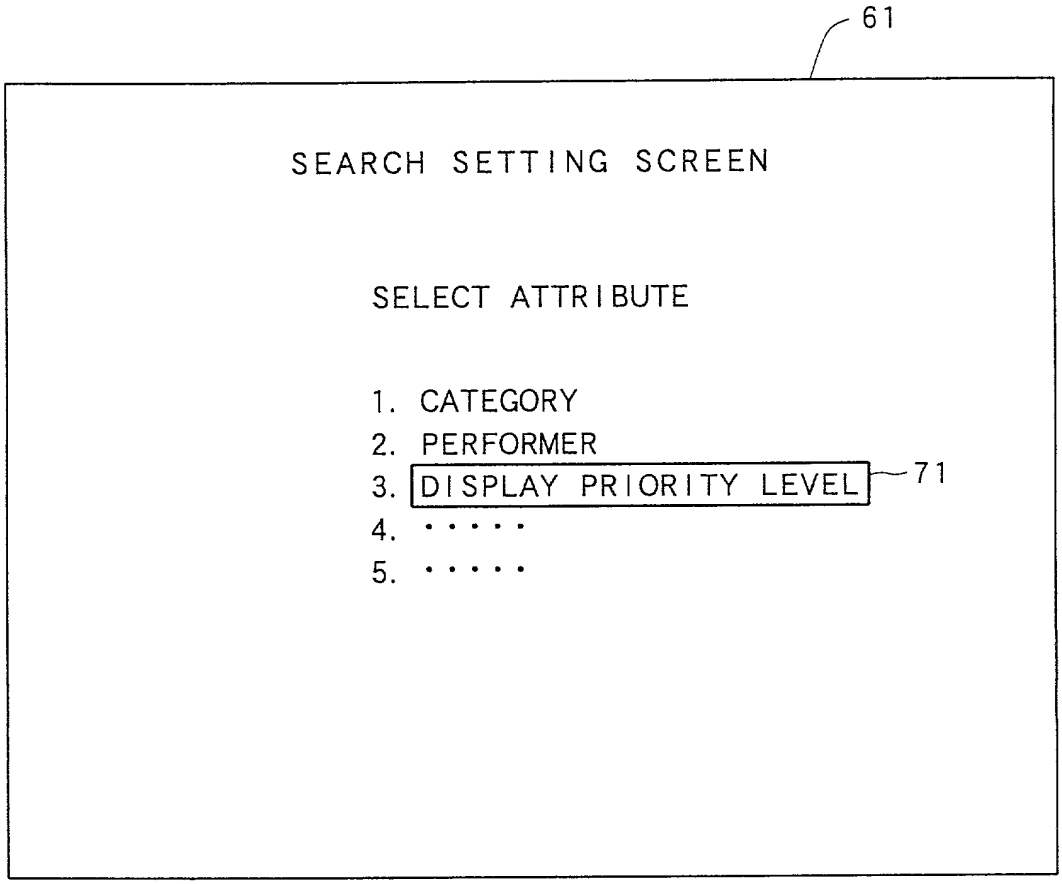

61
SEARCH SETTING SCREEN
SELECT ATTRIBUTE
1. CATEGORY
2. PERFORMER
3. DISPLAY PRIORITY LEVEL
71
4. • • • • •
5. • • • • •

FIG.14

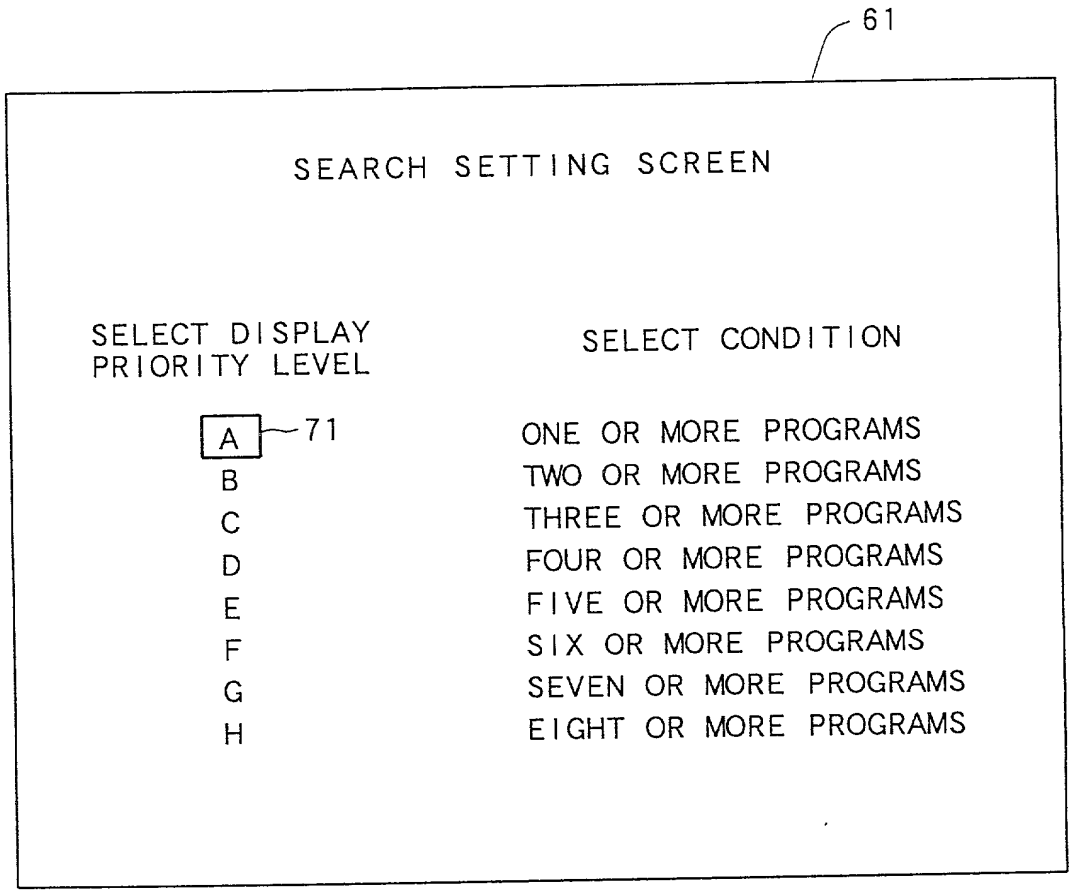

61
SEARCH SETTING SCREEN
SELECT DISPLAY PRIORITY LEVEL
SELECT CONDITION
A
71
B
C
D
E
F
G
H
ONE OR MORE PROGRAMS
TWO OR MORE PROGRAMS
THREE OR MORE PROGRAMS
FOUR OR MORE PROGRAMS
FIVE OR MORE PROGRAMS
SIX OR MORE PROGRAMS
SEVEN OR MORE PROGRAMS
EIGHT OR MORE PROGRAMS

FIG.15

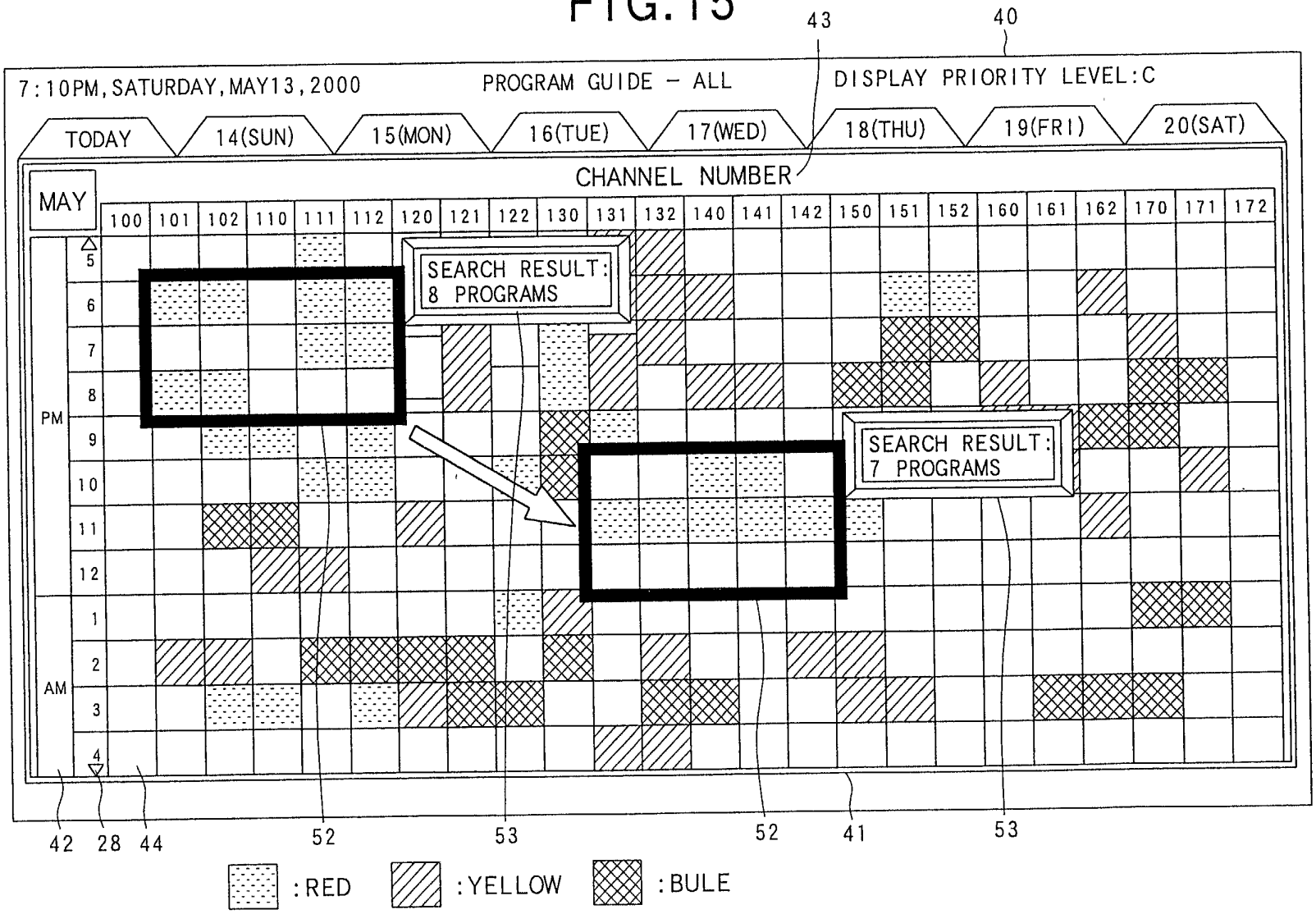

43
40
7:10PM, SATURDAY, MAY13, 2000
PROGRAM GUIDE – ALL
DISPLAY PRIORITY LEVEL:C
TODAY
14(SUN)
15(MON)
16(TUE)
17(WED)
18(THU)
19(FRI)
20(SAT)
CHANNEL NUMBER
MAY
100 101 102 110 111 112 120 121 122 130 131 132 140 141 142 150 151 152 160 161 162 170 171 172
PM
5 6 7 8 9 10 11 12
AM
1 2 3 4
SEARCH RESULT: 8 PROGRAMS
SEARCH RESULT: 7 PROGRAMS
42 28 44 52 53 52 41 53
:RED
:YELLOW
:BULE

FIG.16

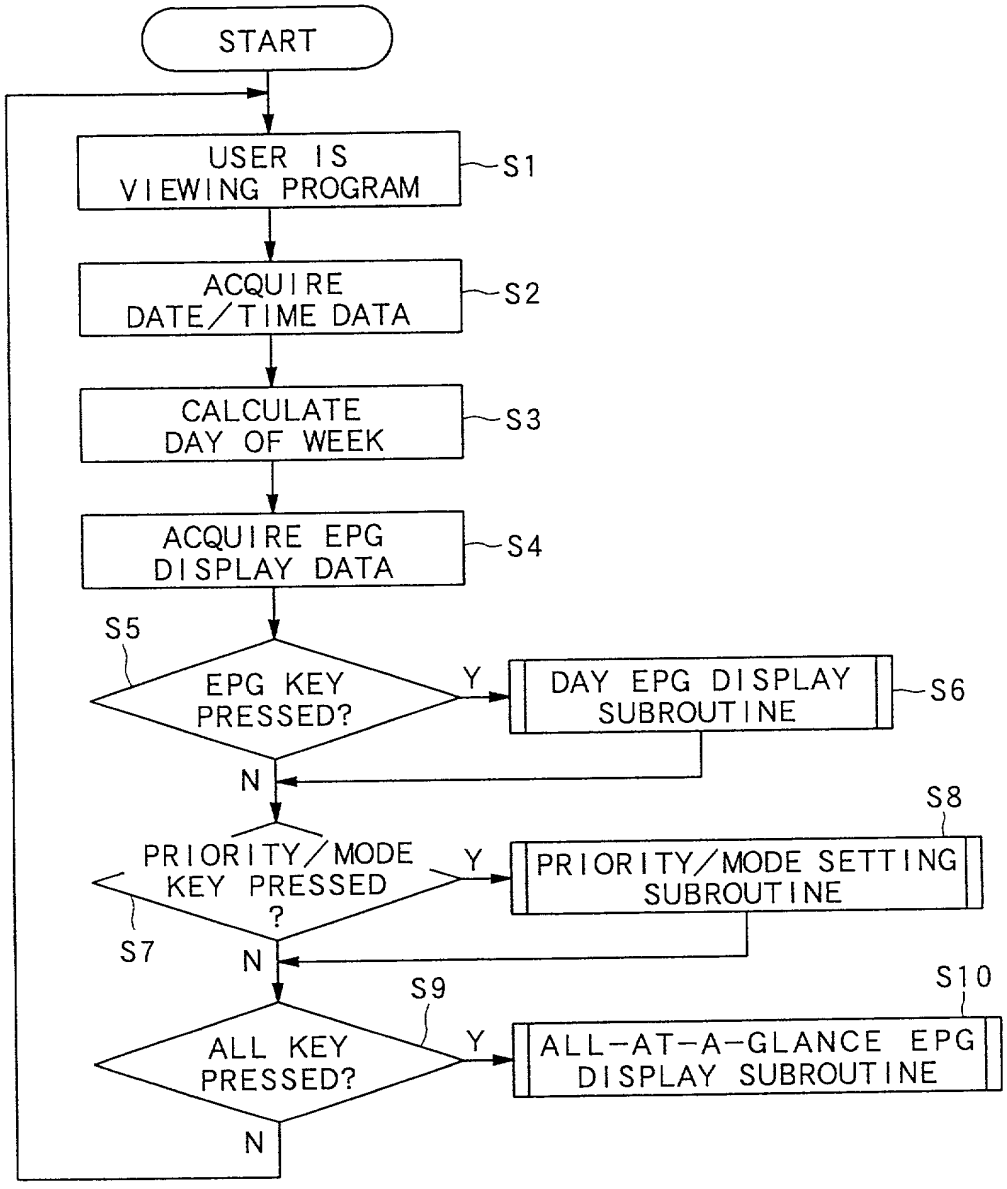

START
USER IS VIEWING PROGRAM
S1
ACQUIRE DATE/TIME DATA
S2
CALCULATE DAY OF WEEK
S3
ACQUIRE EPG DISPLAY DATA
S4
S5
EPG KEY PRESSED?
Y
DAY EPG DISPLAY SUBROUTINE
S6
N
S8
PRIORITY/MODE KEY PRESSED ?
Y
PRIORITY/MODE SETTING SUBROUTINE
S7
N
S9
S10
ALL KEY PRESSED?
Y
ALL-AT-A-GLANCE EPG DISPLAY SUBROUTINE
N

FIG.17

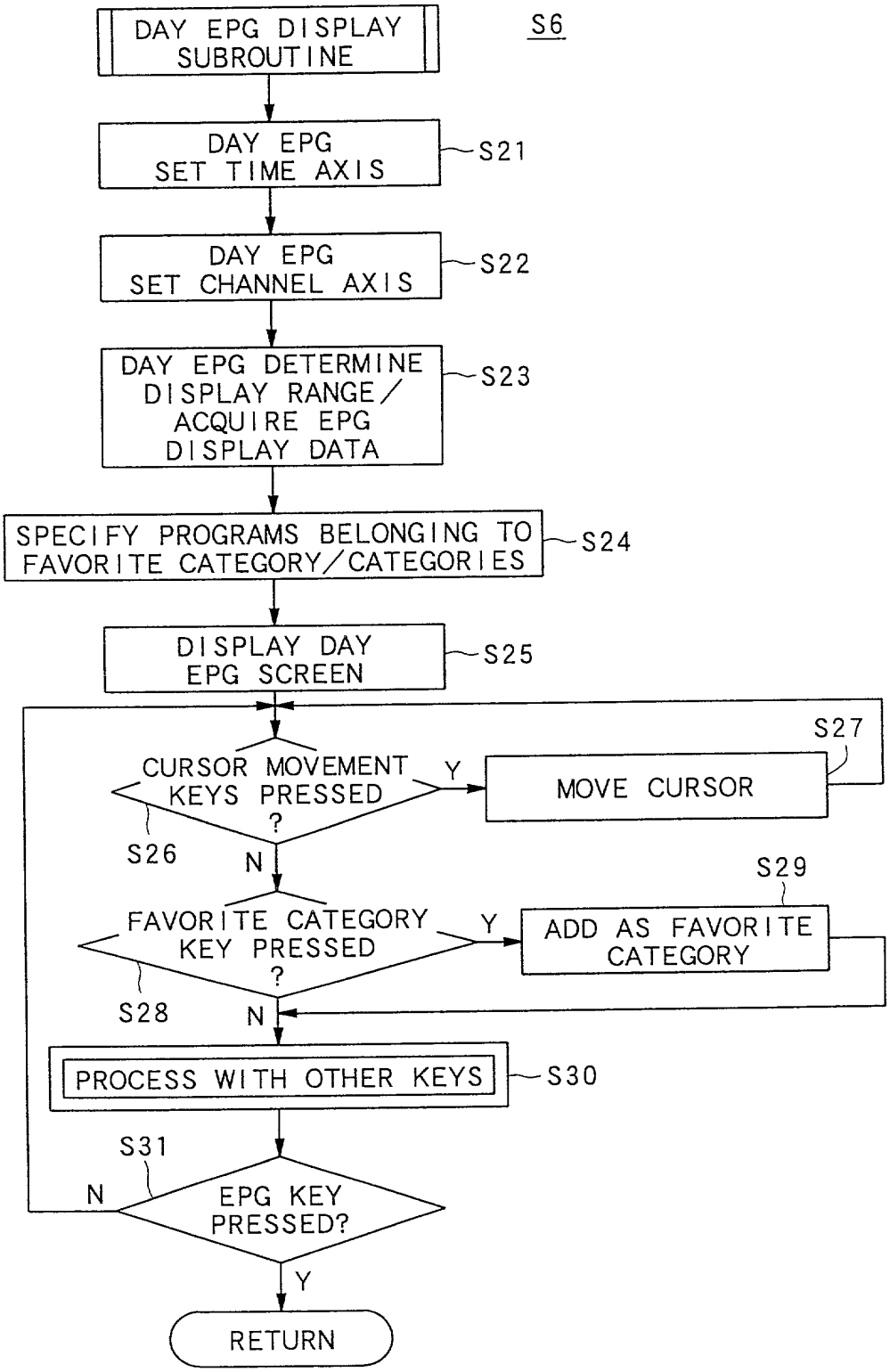
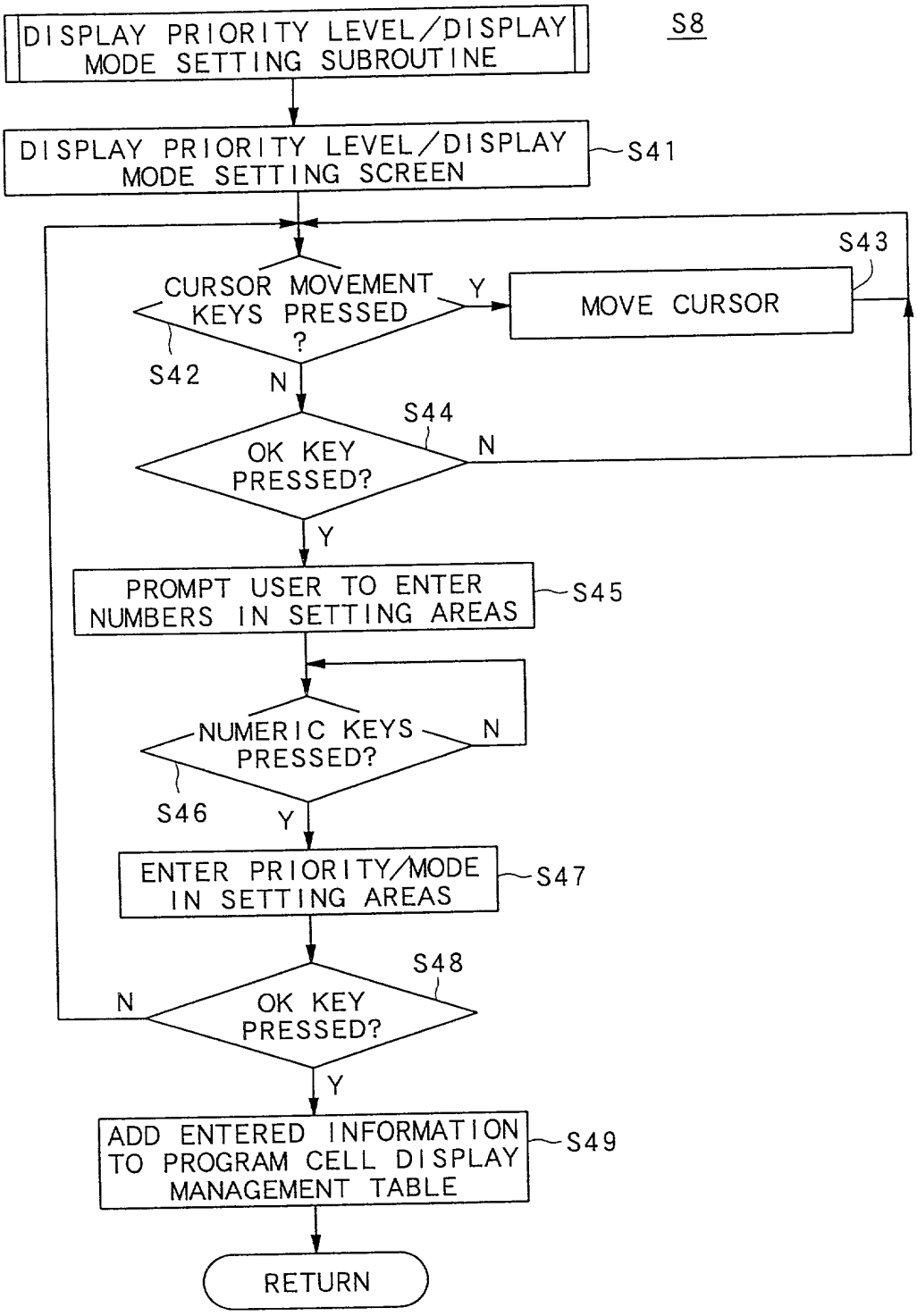

DAY EPG DISPLAY SUBROUTINE
S6
DAY EPG SET TIME AXIS
S21
DAY EPG SET CHANNEL AXIS
S22
DAY EPG DETERMINE DISPLAY RANGE / ACQUIRE EPG DISPLAY DATA
S23
SPECIFY PROGRAMS BELONGING TO FAVORITE CATEGORY/CATEGORIES
S24
DISPLAY DAY EPG SCREEN
S25
CURSOR MOVEMENT KEYS PRESSED ?
Y
MOVE CURSOR
S27
S26
N
FAVORITE CATEGORY KEY PRESSED ?
Y
ADD AS FAVORITE CATEGORY
S29
S28
N
PROCESS WITH OTHER KEYS
S30
S31
N
EPG KEY PRESSED?
Y
RETURN

FIG.18



EP 0 984 359 A2

FIG:19

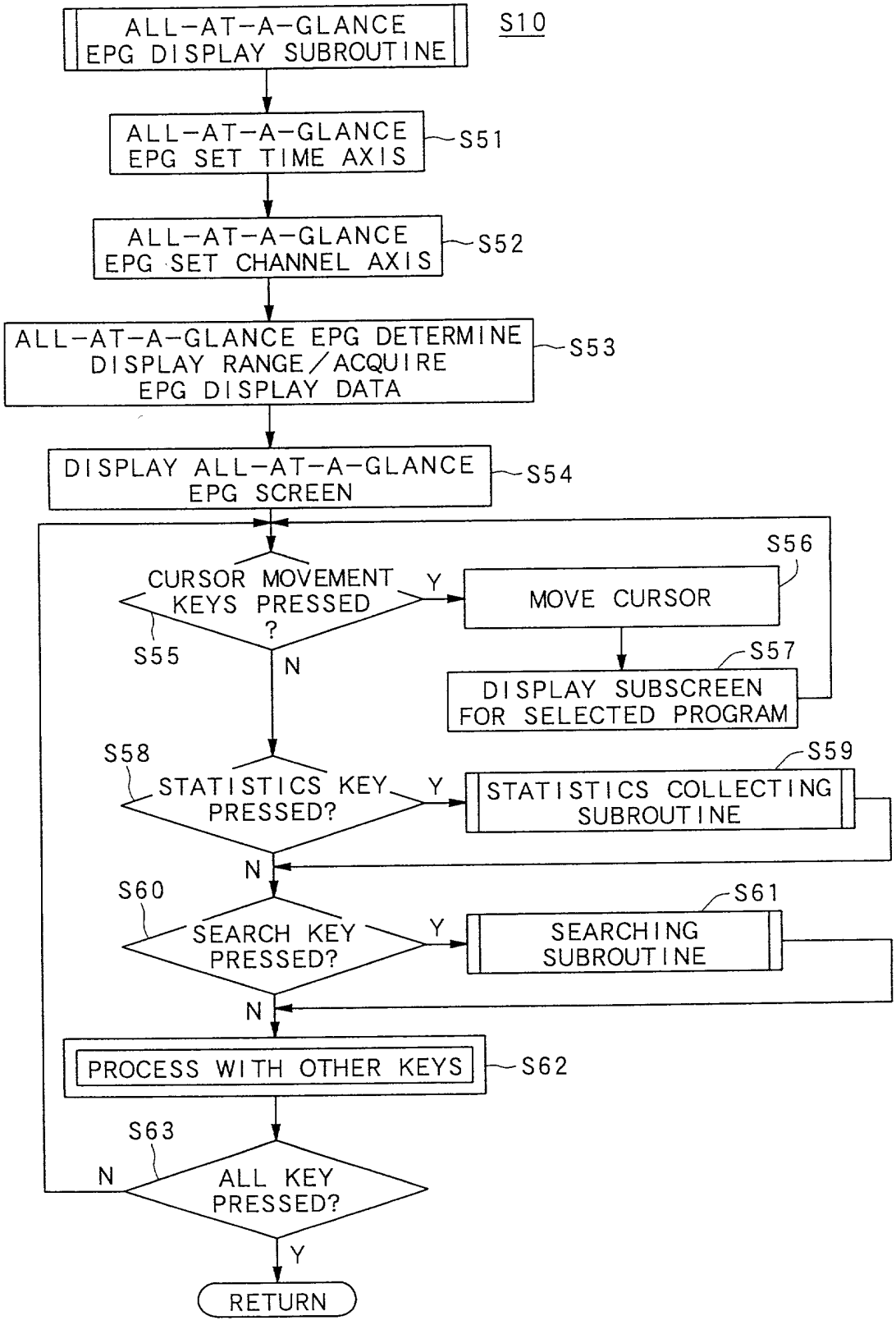

ALL-AT-A-GLANCE EPG DISPLAY SUBROUTINE
S10
ALL-AT-A-GLANCE EPG SET TIME AXIS
S51
ALL-AT-A-GLANCE EPG SET CHANNEL AXIS
S52
ALL-AT-A-GLANCE EPG DETERMINE DISPLAY RANGE/ACQUIRE EPG DISPLAY DATA
S53
DISPLAY ALL-AT-A-GLANCE EPG SCREEN
S54
CURSOR MOVEMENT KEYS PRESSED ?
S55
Y
MOVE CURSOR
S56
N
DISPLAY SUBSCREEN FOR SELECTED PROGRAM
S57
STATISTICS KEY PRESSED?
S58
Y
STATISTICS COLLECTING SUBROUTINE
S59
N
SEARCH KEY PRESSED?
S60
Y
SEARCHING SUBROUTINE
S61
N
PROCESS WITH OTHER KEYS
S62
ALL KEY PRESSED?
S63
N
Y
RETURN

FIG.20

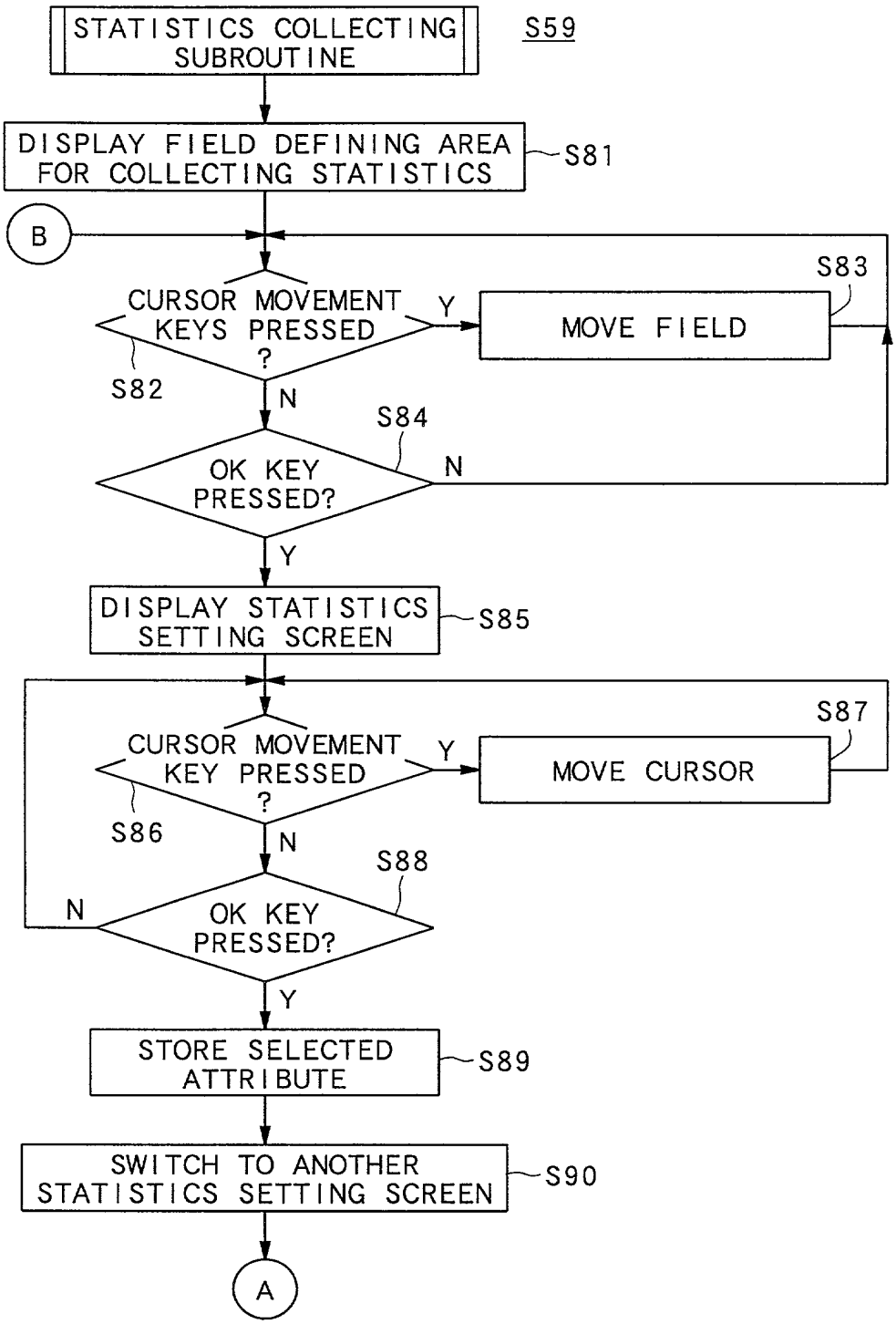

STATISTICS COLLECTING SUBROUTINE
S59
DISPLAY FIELD DEFINING AREA FOR COLLECTING STATISTICS
S81
B
CURSOR MOVEMENT KEYS PRESSED ?
Y
MOVE FIELD
S83
S82
N
OK KEY PRESSED?
S84
N
Y
DISPLAY STATISTICS SETTING SCREEN
S85
CURSOR MOVEMENT KEY PRESSED ?
Y
MOVE CURSOR
S87
S86
N
OK KEY PRESSED?
S88
N
Y
STORE SELECTED ATTRIBUTE
S89
SWITCH TO ANOTHER STATISTICS SETTING SCREEN
S90
A

FIG.21

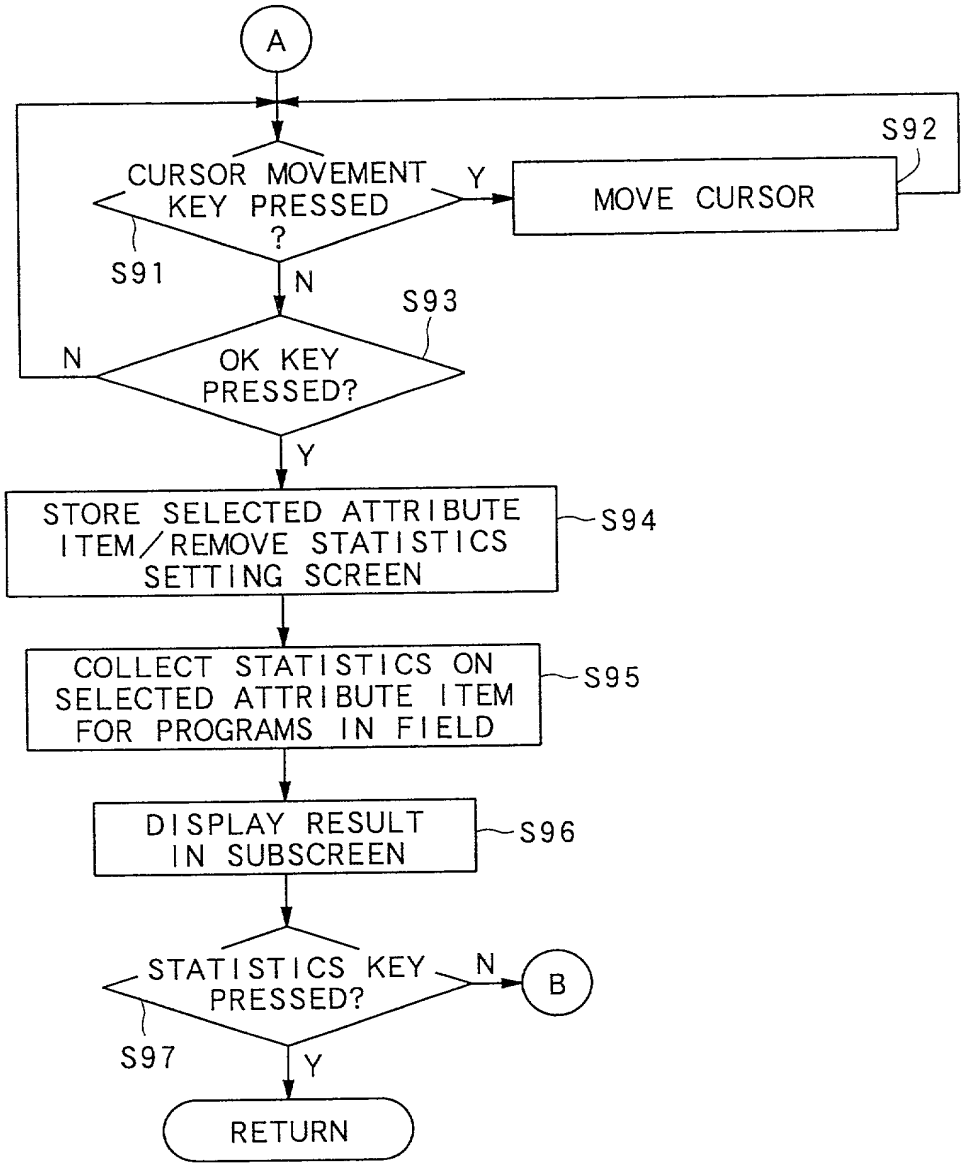

A
CURSOR MOVEMENT KEY PRESSED ?
Y
MOVE CURSOR
S92
S91
N
S93
N
OK KEY PRESSED?
Y
STORE SELECTED ATTRIBUTE ITEM/REMOVE STATISTICS SETTING SCREEN
S94
COLLECT STATISTICS ON SELECTED ATTRIBUTE ITEM FOR PROGRAMS IN FIELD
S95
DISPLAY RESULT IN SUBSCREEN
S96
STATISTICS KEY PRESSED?
N
B
S97
Y
RETURN

FIG.22

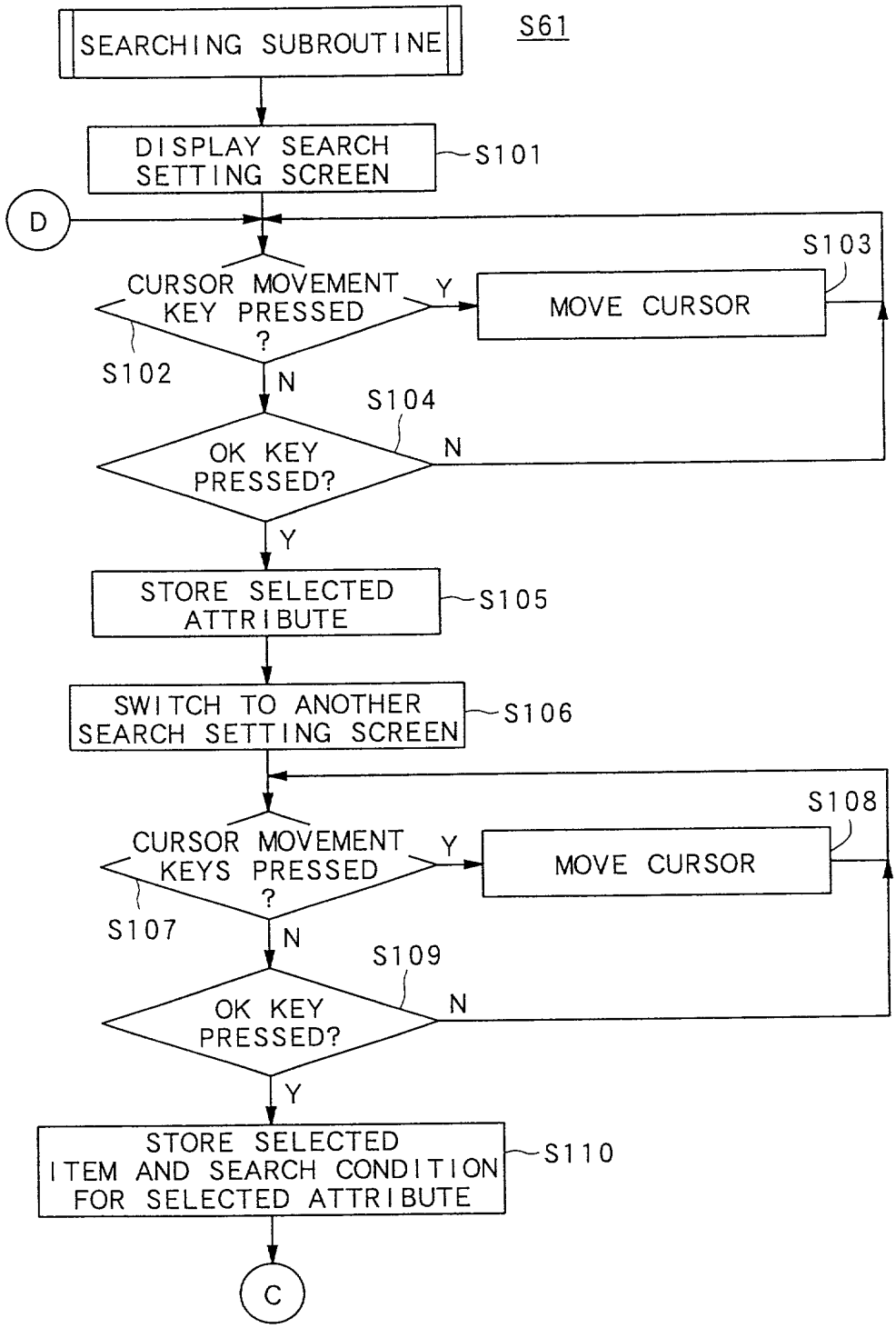
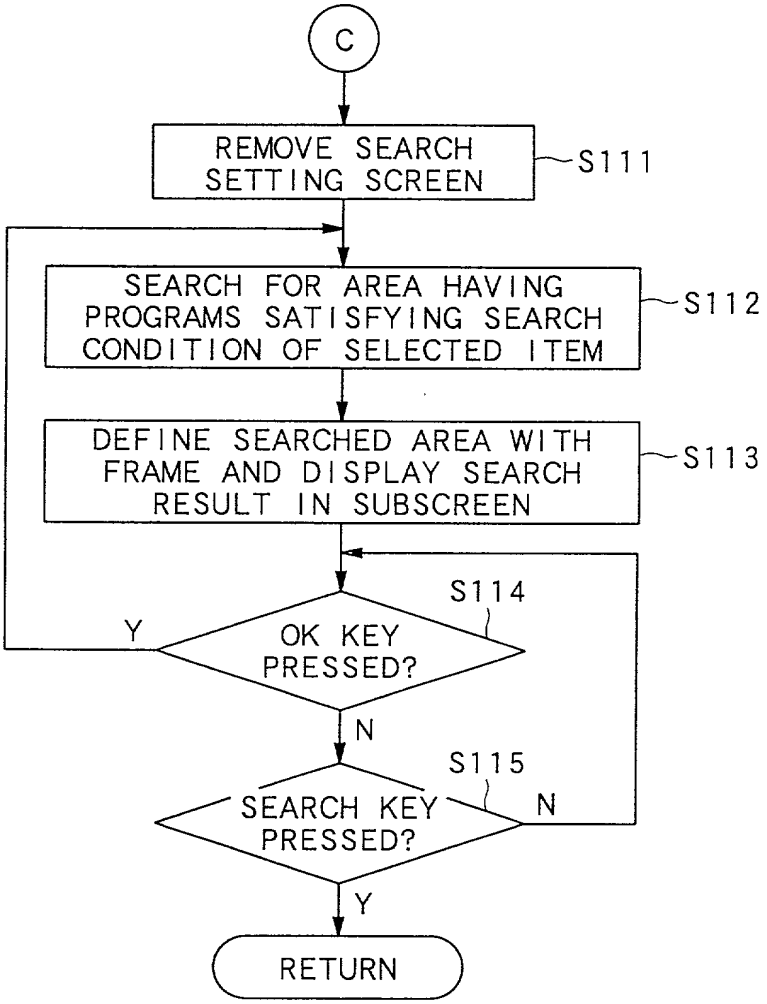

SEARCHING SUBROUTINE
S61
DISPLAY SEARCH SETTING SCREEN
S101
D
CURSOR MOVEMENT KEY PRESSED ?
Y
MOVE CURSOR
S103
S102
N
S104
OK KEY PRESSED?
N
Y
STORE SELECTED ATTRIBUTE
S105
SWITCH TO ANOTHER SEARCH SETTING SCREEN
S106
CURSOR MOVEMENT KEYS PRESSED ?
Y
MOVE CURSOR
S108
S107
N
S109
OK KEY PRESSED?
N
Y
STORE SELECTED ITEM AND SEARCH CONDITION FOR SELECTED ATTRIBUTE
S110
C

FIG.23


C
REMOVE SEARCH SETTING SCREEN
S111
SEARCH FOR AREA HAVING PROGRAMS SATISFYING SEARCH CONDITION OF SELECTED ITEM
S112
DEFINE SEARCHED AREA WITH FRAME AND DISPLAY SEARCH RESULT IN SUBSCREEN
S113
S114
OK KEY PRESSED?
Y
N
S115
SEARCH KEY PRESSED?
N
Y
RETURN